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EXAMINER	
DEAN, RAYMOND S	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/823,905	MILLER ET AL.	
	Examiner	Art Unit	
	Raymond S. Dean	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 3 – 8, 10 – 13, 15 – 17, 19, 21 – 22, 24 – 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3 – 8, 10 – 13, 15 – 17, 19, 21 – 22, 24 – 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Appeal Brief filed February 20, 2007 with respect to the rejection(s) of claim(s) 1, 3 – 8, 10 – 13, 15 – 17, 19, 21 – 22, 24 – 25 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sointula (5,555,450).

Sointula teaches a system comprising: a radio modem unit (Figure 2, Column 3 lines 2 – 3, radio phone is the radio modem unit); an RF signal booster unit connectable to the radio modem unit through a single line connection by way of which radio communication between the radio modem unit and RF signal booster occurs (Figure 2, Col. 3 lines 2 – 10); and auto-detect logic configured to detect a DC offset on said single connection line, said DC offset being indicative of a connection of the radio modem to the RF signal booster unit (Figure 2, Col. 3 lines 2 – 24, the DC voltage signal is the DC offset).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3, 5, 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Sointula (5,555,450).

Regarding Claim 1, Sointula teaches a system comprising: a radio modem unit (Figure 2, Column 3 lines 2 – 3, radio phone is the radio modem unit); an RF signal booster unit connectable to the radio modem unit through a single line connection by way of which radio communication between the radio modem unit and RF signal booster occurs (Figure 2, Col. 3 lines 2 – 10); and auto-detect logic configured to detect a DC offset on said single connection line, said DC offset being indicative of a connection of the radio modem to the RF signal booster unit (Figure 2, Col. 3 lines 2 – 24, the DC voltage signal is the DC offset).

Regarding Claim 3, Sointula teaches all of the claimed limitations recited in Claim 1. Sointula further teaches wherein the auto-detect logic is located within the radio modem unit (Col. 3 lines 46 – 56).

Regarding Claim 5, Sointula teaches all of the claimed limitations recited in Claim 1. Sointula further teaches wherein the booster unit includes an element to reduce the DC power level to low if the radio modem unit is connected to the booster unit (Col. 3 lines 11 – 24, dc/dc converters produce low voltage levels thus when the booster is connected there can be low voltage level produced by the dc/dc converter).

Regarding Claim 7, Sointula teaches all of the claimed limitations recited in Claim 1. Sointula further teaches wherein the voltage on the multiple connection line is high if no booster unit is connected but is low if a booster unit is connected (Col. 3 lines 11 – 24, dc/dc converters produce low voltage levels thus when the booster is connected

there can be low voltage level produced by the dc/dc converter and when the booster is not connected there can be a high voltage level).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4, 6, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sointula (5,555,450) in view of Myrskog et al. (5,457,814).

Regarding Claims 4, Sointula teaches all of the claimed limitations recited in Claims 1. Sointula further teaches allowing the DC offset to be placed onto the single connection line (Figure 2, Col. 3 lines 2 – 24).

Sointula does not teach an inductor and preventing radio frequency energy from passing into the auto-detect logic.

Myrskog teaches an inductor and preventing radio frequency energy from passing up a line (Column 7 lines 7 – 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the inductor taught above in Myrskog in the booster system of Sointula for the purpose of preventing unwanted RF signals from propagating along a transmission line.

Regarding Claim 6, Sointula teaches all of the claimed limitations recited in Claim 5. Sointula does not teach an inductor.

Myrskog teaches an inductor (Column 7 lines 7 – 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the inductor taught above in Myrskog in the booster system of Sointula for the purpose of preventing unwanted RF signals from propagating along a transmission line.

6. Claims 8, 10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Sointula (5,555,450) in view of Pehrsson et al. (US 6,615,059).

Regarding Claim 8, Sointula teaches a radio modem unit comprising a radio including a first DC offset circuit (Figure 2, Column 3 lines 2 – 3, lines 46 – 56, radio phone is the radio modem unit, the direct current voltage signal (OHJ), which is the DC offset is received and detected in the radio phone thus there will be a DC offset circuit enabling said detection); an RF signal connector operably connected to the radio (Figure 2, Col. 1 lines 55 – 57), the connector being connectable to a RF antenna or a booster unit and including a single connection line adapted to carry an RF signal and a DC offset (Figure 2, Cols. 1 lines 55 – 57, 3 lines 2 – 24); and a detector unit adapted to detect the DC offset to determine whether the connector is connected to a booster unit based on an interaction between the first DC offset circuit and a second DC offset circuit included in the booster unit (Col. 3 lines 2 – 24, lines 46 – 56, the direct current voltage signal (OHJ), which is the DC offset is received and detected in the radio phone, said

DC offset is generated in the booster unit thus said booster unit comprises a DC offset circuit).

Sointula does not teach a first dc offset circuit comprising one of a pull-up or a pull-down circuit and second dc offset circuit comprising the other of the pull-up or pull-down circuits

Pehrsson teaches a pull-up and pull-down circuit (See Column 6 lines 38 – 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dc offset circuits of Sointula with the pull-up and pull-down circuits of Pehrsson as an alternative means for providing a high voltage level and a low voltage level.

Regarding Claim 10, Sointula in view of Pehrsson teaches all of the claimed limitations recited in Claim 8. Sointula further teaches wherein the DC offset of the connector is high if no booster unit is connected but is low if a booster unit is connected (Col. 3 lines 11 – 24, dc/dc converters produce low voltage levels thus when the booster is connected there can be low voltage level produced by the dc/dc converter and when the booster is not connected there can be a high voltage level).

Regarding Claim 12, Sointula in view of Pehrsson teaches all of the claimed limitations recited in Claim 8. Sointula further teaches wherein the radio modem unit is connected to a booster unit, the booster unit including a circuit to pull the DC offset at the connector to low (Col. 3 lines 11 – 24, dc/dc converters produce low voltage levels thus when the booster is connected there can be low voltage level produced by the dc/dc converter).

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sointula (5,555,450) in view of Pehrsson et al. (US 6,615,059), as applied to Claim 8 above, and further in view of Myrskog et al. (5,457,814).

Regarding Claim 11, Sointula view of Pehrsson teaches all of the claimed limitations recited in Claim 8.

Sointula in view of Pehrsson does not teach wherein an inductor is used as part of the detector unit.

Myrskog teaches an inductor (Column 7 lines 7 – 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the inductor taught above in Myrskog in the booster system of Sointula in view of Pehrsson for the purpose of preventing unwanted RF signals from propagating along a transmission line.

8. Claims 13 – 17, 22, 24 – 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sointula (5,555,450) in view of Pehrsson et al. (US 6,615,059) and in further view of Barber (US 6,230,031).

Regarding Claim 13, Sointula teaches a system comprising: a radio modem unit including a first DC offset circuit (Figure 2, Column 3 lines 2 – 3, lines 46 – 56, radio phone is the radio modem unit, the direct current voltage signal (OHJ), which is the DC offset is received and detected in the radio phone thus there will be a DC offset circuit enabling said detection); and an RF signal booster unit including a second DC offset circuit (Col. 3 lines 2 – 24, lines 46 – 56, the direct current voltage signal (OHJ), which is

the DC offset is received and detected in the radio phone, said DC offset is generated in the booster unit thus said booster unit comprises a DC offset circuit), wherein the booster unit is connectable to the radio modem unit with a single coaxial connection line adapted to transmit RF signals and a DC offset indicative of the presence of the booster unit based on an interaction between the first and second DC offset circuits (Col. 3 lines 2 – 24, lines 46 – 56).

Sointula does not teach wherein baseband signals are transmitted to the RF signal booster unit by way of the single coaxial connection by the radio modem and are used by the booster unit to prepare for transmission, a first dc offset circuit comprising one of a pull-up or a pull-down circuit; second dc offset circuit comprising the other of the pull-up or pull-down circuits.

Pehrsson teaches a pull-up and pull-down circuit (See Column 6 lines 38 – 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dc offset circuits of Sointula with the pull-up and pull-down circuits of Pehrsson as an alternative means for providing a high voltage level and a low voltage level.

Barber teaches baseband signals that are transmitted to the RF signal booster unit by way of a line connection by the radio modem and are used by the booster unit to prepare for transmission (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPUs communicate via signals that are in the digital information range which is the range

where the digital information signal has not been mixed with a high frequency carrier such that it modulates said carrier, this is the base band range).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sointula in view of Pehrsson with the power control circuitry of Barber for the purpose of controlling the amplification to compensate for RF signal loss as taught by Barber.

Regarding Claim 22, Sointula teaches a method of using a radio modem unit and an RF signal booster unit, the booster unit and radio modem unit connectable using a connector establishing a connection line (Col. 3 lines 2 – 24), the method comprising: in the radio modem unit, detecting a DC offset on the connection line to determine whether the booster unit is connected based on an interaction between a first DC offset circuit in the radio modem and a second DC offset circuit in the booster unit (Col. 3 lines 2 – 24, lines 46 – 56, the direct current voltage signal (OHJ), which is the DC offset is received and detected in the radio phone thus said radio phone comprises a DC offset circuit enabling said detection, said DC offset is generated in the booster unit thus said booster unit comprises a DC offset circuit); and thereafter, transmitting an RF signal on the multiple line connection from the radio modem to the booster unit (Col. 3 lines 2 – 24).

Sointula does not teach if the booster unit is connected, transmitting base band signals on the multiple line connection from the radio modem to the booster unit to allow the booster unit to prepare for transmission, a first dc offset circuit comprising one of a pull-up or a pull-down circuit; a second dc offset circuit comprising the other of the pull-up or pull-down circuits.

Pehrsson teaches a pull-up and pull-down circuit (See Column 6 lines 38 – 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dc offset circuits of Sointula with the pull-up and pull-down circuits of Pehrsson as an alternative means for providing a high voltage level and a low voltage level.

Barber teaches if the booster unit is connected, transmitting base band signals on the multiple line connection from the radio modem to the booster unit to allow the booster unit to prepare for transmission (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPUs communicate via signals that are in the digital information range which is the range where the digital information signal has not been mixed with a high frequency carrier such that it modulates said carrier, this is the base band range).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sointula in view of Pehrsson with the power control circuitry of Barber for the purpose of controlling the amplification to compensate for RF signal loss as taught by Barber.

Regarding Claims 15, 24, Sointula in view of Pehrsson and in further view of Barber teaches all of the claimed limitations recited in Claim 13, 22. Barber further teaches wherein the base band signals are power control signals (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate

via digital control messages, the CPUs communicate via signals that are in the digital information range which is the range where the digital information signal has not been mixed with a high frequency carrier such that it modulates said carrier, this is the base band range).

Regarding Claims 16, 25, Sointula in view of Pehrsson and in further view of Barber teaches all of the claimed limitations recited in Claims 15, 24. Barber further teaches wherein the power control signals are used to control the power and channel selection (Column 5 lines 30 – 46, the channel can be the 800 MHz band or the 1.9 GHz band).

Regarding Claim 17, Sointula in view of Pehrsson and in further view of Barber teaches all of the claimed limitations recited in Claim 13. Sointula in view of Pehrsson does not teach wherein the RF signal booster unit that includes a switch that prevents RF energy from being provided to a power amplifier in the booster unit until a valid power controller message is received from the radio modem.

Barber teaches wherein the RF signal booster unit that includes a switch that prevents RF energy from being provided to a power amplifier in the booster unit until a valid power controller message is received from the wireless radio transceiver (Figure 4, Figure 5, Figure 6, Figure 9, Figure 10, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, Column 10 lines 17 – 24, the diodes/switches are reversed biased such that the incoming signal is severely attenuated thereby causing the signal transmission portion of the amplifier circuit to shut down, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control

messages, the CPU in the booster module will reverse bias the diodes such that a particular amplification circuit will shut down based on the mode of the wireless radio transceiver, said radio transceiver mode control message is transmitted by the wireless radio transceiver CPU to the booster module CPU such that the booster module is configured to produce the correct power level).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the switch of Barber in the system of Sointula in view of Pehrsson for the purpose controlling the amplification by the booster as taught by Barber.

9. Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sointula (5,555,450) in view of Pehrsson et al. (US 6,615,059) and in further view of Jonassen (3,890,543).

Regarding Claim 19, Sointula teaches an RF signal booster unit adapted to amplify RF signals from a radio modem including a first DC offset circuit (Figure 2, Col. 3 lines 2 – 24, lines 46 – 56, the direct current voltage signal (OHJ), which is the DC offset is received and detected in the radio phone thus said radio phone comprises a DC offset circuit enabling said detection), the booster unit including a second DC offset circuit (Col. 3 lines 2 – 24, lines 46 – 56, the DC offset is generated in the booster unit thus said booster unit comprises a DC offset circuit), a switch that significantly attenuates the RF energy form the radio modem that is provided to a power amplifier in the booster unit by way of a single connection line adapted to further carry a DC offset

indicative, based on the interaction between the first and second DC offset circuits, of the presence of the booster unit, until a valid power control message is received from the radio modem (Cols. 3 lines 2 – 24, 4 lines 40 – 46, when the radio phone is without the booster the RF energy will be significantly attenuated).

Sointula does not teach a radio modem including a first DC offset circuit which comprises one of a pull-up or pull-down circuit, a booster unit including a second DC offset circuit which comprises the other of the pull-up or pull-down circuits, the switch comprising a pair of diodes arranged back-to-back and disposed in the RF signal path, such that when the switch is in the ON position RF signals pass through the diodes from the radio modem to the booster unit, and when the switch is in an OFF position, RF signals are precluded by the diodes from effectively passing from the radio modem to the booster unit.

Pehrsson teaches a pull-up and pull-down circuit (See Column 6 lines 38 – 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dc offset circuits of Sointula with the pull-up and pull-down circuits of Pehrsson as an alternative means for providing a high voltage level and a low voltage level.

Jonassen teaches switch comprising a pair of diodes arranged back-to-back and disposed in the RF signal path, such that when the switch is in the ON position RF signals pass through the diodes, and when the switch is in an OFF position, RF signals are precluded by the diodes from effectively passing (Col. 2 lines 10 – 19, the diodes

are arranged such that said diodes can be switched to allow signals to pass and prevent signals from passing thus providing protection).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the booster system of Sointula in view of Pehrsson with the back to back configuration of Jonassen for the purpose of protecting the circuitry as taught by Jonassen.

Regarding Claim 21, Sointula in view of Pehrsson and in further view of Jonassen teaches all of the claimed limitations recited in Claim 19. Jonassen further teaches wherein when the switch is in the ON position, current flows through the diodes and the RF impedance of the switch is reduced, but when the switch is in the OFF position, current is not flowing through the diodes, and the RF impedance of the switch is high (Col. 2 lines 10 – 19, the diodes are arranged such that said diodes can be switched to allow signals to pass (low impedance) and prevent signals from passing thus providing protection (high impedance)).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S. Dean whose telephone number is 571-272-7877. The examiner can normally be reached on Monday-Friday 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond S. Dean
June 6, 2007

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